

ABSTRACT

An optical fiber coupling part capable of reducing coupling loss while maintaining a large operating distance, and having a good module assembling property. At least one GRIN lens having numerical aperture NA that is larger than numerical aperture NAs of a light-emitting source (such as a semiconductor laser) is fusion-spliced with one end of the optical fiber. All lights emitted from the light-emitting source can enter the GRIN lens, and the loss of the light can thereby be reduced. In addition, a second GRIN lens having numerical aperture NA_2 is fusion-spliced with one end of the optical fiber having numerical aperture NA_f , and further a first GRIN lens having numerical aperture NA_1 , which is larger than numerical aperture NA_2 , is fusion-spliced with the other end of the second GRIN lens. Thereby, the light emitted from the light-emitting source can efficiently enter the optical fiber, and loss of the light can thereby be reduced. In this case, the formula expressed by $NA_f \leq NA_2 < NAs \leq NA_1$ is desirable.